

are updated prior to the next iteration using formula (17). ~~A detailed description of one algorithm for updating the decomposition coefficients is described in U.S. patent application number \_\_\_\_\_ to Lashkari et al. (Attorney Docket No. 10745/20).~~ The iterations of the gradient search algorithm are repeated until either the step-size becomes smaller than a predefined value  $\mu_{\min}$ , a predetermined number of iterations are completed, or the roots are resolved within a predetermined distance from the unit circle.

On page 17, please replace the paragraph beginning on line 5 with the following paragraph:

Figure 3 shows a sequence of computations that requires fewer calculations to optimize the synthesis polynomial  $A(z)$ . The sequence shows the computations for one frame 50 and are repeated for each frame 62 of speech. First, the synthesized speech  $\hat{s}(n)$  is computed for each sample in the frame using formula (10) 52. The computation of the synthesized speech is repeated until the last sample in the frame has been computed 54. The first roots of the synthesis filter polynomial  $A(z)$  are then computed using a standard root finding algorithm 56. Next, roots of the synthesis polynomial are optimized with an iterative gradient search algorithm using formulas (27), (25), (24) and (23) 58. The iterations are then repeated until a completion criteria is met, for example if an iteration limit is reached 60.